HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Attorney Docket No.: 200400253-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Shaun Kazuo WAKUMOTO et al.	**Confirmation No.:**	2771
Serial No.:	10/812,260	**Examiner:**	Warner WONG
Filed:	March 29, 2004	**Group Art Unit:**	2471

Title: DIRECTED COST PROTOCOL

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF - PATENTS

Sir:

This is an Appeal Brief in connection with the decisions of the Examiner in an Office Action mailed October 21, 2010, and in connection with the Notice of Appeal filed on January 20, 2011.

It is respectfully submitted that the present application has been at least twice rejected.

Each of the topics required in an Appeal Brief and a Table of Contents are presented herewith and labeled appropriately.

TABLE OF CONTENTS

(1) Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

(2) Related Appeals and Interferences

The Appellant is unaware of any appeals or interferences related to this case.

(3) Status of Claims

Claims 1-21 are pending and stand rejected.

Pursuant to 37 C.F.R. § 41.37, the Appellant hereby appeals the Examiner's decision finally rejecting all of the pending claims to the Board of Patent Appeals and Interferences. Therefore, claims 1-21 of this application are appealed.

(4) Status of Amendments

No amendment was filed subsequent to the Final Office Action dated February 25, 2010.

A copy of the claims at issue on appeal is attached as the Claims Appendix.

(5) Summary of Claimed Subject Matter

Claims 1, 9 and 15 are the independent claims in this appeal. It should be understood that the citations below to the original disclosure as providing support for the claimed features are merely exemplary and do not limit the claim features to only those citations.

Claim 1. A method (Fig. 6) of cost determination for paths between switches in a mesh, the method comprising:

defining a set of paths between each pair of the mesh switches, each pair comprising a source switch and a destination switch (606 in Fig. 6; *Specification*, page 13, lines 28-29 and page 14, lines 8-14);

calculating start-up costs for the previously defined paths (604 in Fig. 6; *Specification*, page 13, lines 7-16); and

recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the destination switch to the source switch for each pair (612 in Fig. 6; *Specification*, page 14, lines 3-7 and 14-25).

Claim 9. A switching mesh (Fig. 7) comprising multiple packet switches (Switches A, B, C, D, wherein each switch is shown in Fig. 3), the switching mesh including

means (Switch Control 304; *Specification*, page 8, lines 3-9) for defining a set of paths between each pair of the mesh switches, each pair comprising a first switch and a second switch (606 in Fig. 6; *Specification*, page 13, lines 28-29 and page 14, lines 8-14);

means (Switch Control 304; *Specification*, page 8, lines 3-9) for calculating start-up costs for the defined paths (604 in Fig. 6; *Specification*, page 13, lines 7-16); and

means (Switch Control 304; *Specification*, page 8, lines 3-9) for recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the second switch to the first switch for each pair (612 in Fig. 6; *Specification*, page 14, lines 3-7 and 14-25).

Claim 15. A packet switch (Fig. 3) in a switching mesh (Fig. 7), the packet switch comprising:

a plurality of ports (ports 320, 328, and 337 in Fig. 3) configured to connect to at least one destination switch in the switching mesh (*Specification*, from page 8, line 30 to page 9, line 7); and

a switch control device (Switch Control 304 in Fig. 3) coupled to the plurality of ports, wherein the switch control device is configured to define a set of paths from the packet switch to the destination switch, calculate start-up cost for the previously defined paths, and execute directed cost protocol instructions in order to recalculate costs for previously defined paths by receiving a cost packet transmitted from the destination switch only down each of the previously defined paths (*Specification*, page 13, lines 7-16 and 28-32; page 14, lines 3-7 and 14-25).

(6) Grounds of Rejection to be Reviewed on Appeal

A. Whether claims 1-3, 8, 9, and 15-18 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2005/0078656 to Bryant (hereinafter "Bryant") in view of U.S. Patent Application Publication No. 2004/0190445 to Dziong et al. (hereinafter "Dziong").

Note that in the Office Action, the heading of the rejection of claims 1-3, 8, 9, and 15-18 appears to be erroneous by citing U.S. Patent No. 6,377,551 to Luo. However, the body of the rejection of these claims cites only Bryant and Dziong.

B. Whether claims 4-6 and 19-21 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong and further in view of U.S. Patent Application Publication No. 2005/0249215 to Kelsey et al. (hereinafter "Kelsey").

C. Whether claims 7, 10 and 11 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong and further in view of U.S. Patent Application Publication No. 2005/0068941 to Erhart (hereinafter "Erhart").

D. Whether claims 12-14 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong and Erhart, and further in view of Kelsey.

(7) Arguments

A. The rejection of claims 1-3, 8, 9 and 15-18 under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong should be reversed.

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007):

> "Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." Quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

According to the Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, Federal Register, Vol. 72, No. 195, 57526, 57529 (October 10, 2007), once the *Graham* factual inquiries are resolved, there must be a determination of whether the claimed invention would have been obvious to one of ordinary skill in the art based on any one of the following proper rationales:

> (A) Combining prior art elements according to known methods to yield predictable results; (B) Simple substitution of one known element for another to obtain predictable results; (C) Use of known technique to improve similar devices (methods, or products) in the same way; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) ''Obvious to try''—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; (G)

> Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

Furthermore, as set forth in *KSR International Co. v. Teleflex Inc.*, quoting from *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006), "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasonings with some rational underpinning to support the legal conclusion of obviousness."

Furthermore, as set forth in MPEP 2143.03, to ascertain the differences between the prior art and the claims at issue, "[a]ll claim limitations must be considered" because "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385.

- **Claims 1-3, 8-9, and 15-18:**

Claims 1-3, 8-9, and 15-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong. This rejection should be reversed for at least the following reasons.

  - Independent Claim 1:

Independent claim 1 recites a method comprising, *inter alia*,

> recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet **only** down each of **the previously defined paths** from the destination switch to the source switch for each pair. (*Emphasis added*)

Bryant in view of Dziong fails to teach or suggest the claimed features recited above for at least the following reasons.

In the Office Action, the Examiner correctly admits that Bryant fails to teach or suggest recalculating the cost of the previously defined paths by transmitting a cost packet down only the previously defined paths from the destination switch to the source switch, as recited above in claim 1 (See *Office Action*, page 3).

The Examiner then asserts that the features recited above are disclosed in paragraph [0143] of Dziong. *Id*. However, that assertion is respectfully traversed. Paragraph [0143] of Dziong discloses,

> In step 1110, the second flow starts with the calculation of L disjoint lowest total-cost pairs of paths for the new service where cost is determined for each path using the PathCost routine of FIG. 10 with Option=1 (e.g., no sharing considered). Next, in step 1112, the cost of each of the L restoration paths that were determined in step 1110 is recalculated using the PathCost routine, this time with Option=2 (e.g., sharing considered) and the appropriate primary path passed to the routine.

As such, in paragraph [0143], Dziong discloses that, initially, the cost of the lowest total-cost paths is calculated by using Option 1 where links that have shared bandwidth are not considered, and subsequently, the cost of the restoration paths is recalculated by using Option 2 where the links that have shared bandwidth are taken into consideration. Also, paragraph [0138] of Dziong discloses that when bandwidth sharing is possible for a link, there is no immediate cost for a restoration path reservation using that link. Thus, by using the Option 2 where the links with shared bandwidth are considered, the cost of the restoration paths may be lowered.

Thus, paragraph [0143] of Dziong merely discloses that links that have shared bandwidth are considered when recalculating the restoration paths. However, taking links that have shared bandwidth into consideration is not the same as transmitting a cost packet down previously defined paths from a destination switch to a source switch, much less transmitting a cost packet down only the previously defined paths from the destination switch to the source switch, as recited in claim 1. Therefore, Dziong fails to teach or suggest, "recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the destination switch to the source switch for each pair," as recited in claim 1.

Furthermore, Bryant in view of Dziong fails to teach or suggest, "recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet **only** down each of **the previously defined paths** from the destination switch to the source switch for each pair," as recited in claim 1, for at least the following reasons.

In Dziong, as discussed above, the calculation of the cost of the lowest total-cost paths uses Option 1 by not considering links with shared bandwidth, and the recalculation of the restoration paths uses Option 2 does take links with shared bandwidth into consideration. As such, it appears that the restoration paths will include links or paths that are different from the lowest total-cost paths. In other words, the restoration paths will include paths that are not previously defined by the lowest total-cost paths. Therefore, the recalculation of the cost of the restoration paths as disclosed in paragraph [0143] of Dziong includes the cost of paths that are not previously defined by the lowest total-cost paths. Therefore, Dziong fails to teach or suggest

"recalculating cost ... by transmitting a directed cost packet only down each of the previously defined paths from the destination switch to the source switch for each pair," recited in claim 1.

In setting forth the rejection of claim 1, the Examiner asserts that Bryant discloses in paragraphs [0008], [0028], and [0034], the feature of transmitting a directed cost packet down each of the previously defined paths (See *Office Action*, page 3, lines 9-13). However, that assertion is respectfully traversed. Paragraph [0008] of Bryant describes a problem in the network when a packet is caught in an infinite loop. Such an infinite loop causes a problem for the network because the packet is stuck in the infinite loop and never reaches the destination node. Thus, the infinite loop disclosed in paragraph [0008] is unrelated to transmitting a cost packet down each of the previously defined paths from the destination switch to the source switch, as recited in claim 1.

Paragraph [0028] fails to teach or suggest the claimed features recited above because it shows only a title "General Overview."

Paragraph [0034] discloses that in addition to a failure mode, a network change can take place when a link cost is increased or decreased, when a new router is introduced into the network, or when a router is removed from the network. Thus, paragraph [0034] merely describes different scenarios of when changes occur in a network. However, a change in a link cost and the addition or removal of a router are unrelated to whether a cost packet is transmitted down each of the previously defined paths. Therefore, contrary to the Examiner's assertion, paragraph [0034] also fails to teach or suggest transmitting a cost packet down each the previously defined paths, as recited in claim 1.

In addition, Bryant discloses a data communications network (Fig. 1) having a plurality of interconnected nodes R1-R5 (See *Bryant*, paragraph [0035]) for calculating the shortest path from a source to a destination (See paragraphs [0036]-[0038]). When a new node R6 is added to the network, the new node R6 floods the network, i.e., broadcast and not unicast, with its link information to all nodes R1-R5 (See *Bryant*, paragraph [0045]). In response, each node (such as R1) uses its routing table to calculate the lowest-cost path to the new node R6 (See paragraphs [0047]-[0058]).

For example, Figs. 6-7 of Bryant show that, when a new node R6 is added to the network, the system recalculates the lowest cost path from source node R1 to destination node R5, by starting from the source node R1 and going link-by-link towards the destination node R5. At node R3, the path selects link Net8 to node R6, rather than link Net6 to node R5, because the cost of link Net 8 (which is 1) is less than the link Net6 (which is 4). Thus, in Bryant, although there are two links (Net 8 and Net 6) that go from node R3 to destination node R5, the system selects only one link that has the lowest cost. As such, the system in Bryant fails teach or suggest transmitting a cost packet down **each** (i.e., all) **of the previously defined paths** from the destination switch to the source switch, as recited in claim 1.

In view of the foregoing reasons, Bryant and Dziong, taken individually or in combination, fails to teach or suggest, "recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the destination switch to the source switch for each pair," as recited in claim 1. Accordingly, independent claim 1 is *not* obvious in view of the combined disclosures

contained in Bryant and Dziong, as asserted in the Office Action. Therefore, reversal of the rejection of independent claim 1 and allowance of the claim is respectfully requested.

- Independent Claims 9 and 15:

Independent claim 9 recites, *inter alia*,

> means for defining a set of paths between each pair of the mesh switches, each pair comprising a first switch and a second switch;
> means for calculating start-up costs for the defined paths; and
> means for recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the second switch to the first switch for each pair.

Thus, the means recited in independent claim 9 perform functions similar to the steps recited in independent claim 1, namely, "defining a set of paths between each pair of the mesh switches," "calculating start-up costs for the defined paths," and "recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the second switch to the first switch for each pair." Therefore, independent claim 9 is believed to be allowable over Bryant in view of Dziong for at least the same reasons set forth above with respect to independent claim 1. Accordingly, it is respectfully requested that the rejection of independent claim 9 be reversed and claim 9 be allowed.

- Independent Claim 15:

Independent claim 15 recites, *inter alia*,

> a switch control device coupled to the plurality of ports, wherein the switch control device is configured to define a set of paths from the packet switch to the destination switch, calculate start-up cost for the previously defined paths, and execute directed cost protocol instructions in order to recalculate costs for previously defined paths by receiving a cost packet transmitted from the destination switch only down each of the previously defined paths.

Thus, the switch control device in independent claim 15 performs functions similar to the steps recited in independent claim 1, namely, "define a set of paths from the packet switch to the destination switch," "calculate start-up cost for the previously defined paths," and "recalculate costs for previously defined paths by receiving a cost packet transmitted from the destination switch only down each of the previously defined paths." Therefore, independent claim 15 is believed to be allowable over Bryant in view of Dziong for at least the same reasons set forth above with respect to independent claim 1. Accordingly, it is respectfully requested that the rejection of independent claim 15 be reversed and claim 15 be allowed.

- Dependent Claims 2-3, 8, 16-18:

Claims 2-3, 8, and 16-18 are dependent from one of independent claims 1 and 15. Thus, they are also believed to be allowable over the cited documents of record for at least the same reasons as set forth to independent claims 1 and 15 above. It is therefore respectfully requested that the rejection of claims 2-3, 8, and 16-18 be reversed, and these dependent claims be allowed.

Furthermore, these dependent claims recite additional features not found in the cited documents of record. For instance, claim 3 recites, "wherein the directed cost protocol further comprises unicasting the cost packet via the specific path to the source switch."

In the rejection of claim 3, the Examiner asserts that Bryant discloses the features recited above in paragraph [0006] (See *Office Action*, page 4). More specifically, the Examiner asserts that, in paragraph [0006] of Bryant, the generation and propagation of a link state advertisement packet from one switch/router to another along any one route is equivalent to unicasting. *Id.* However, that assertion is respectfully traversed because Bryant discloses in paragraph [0006] that each router receives a link state update, stores a cop of the link state, and then propagates the update to other routers. As such, it appears that each router broadcasts its update to other routers, and thus, does not unicast the update via a specific path to a source switch. Therefore, Bryant fails to teach or suggest "unicasting the cost packet via the specific path to the source switch" as part of recalculating the cost, as recited in claim 3.

Claim 17 recites a "unicasting" feature similar to that of claim 3. Thus, the response above also applies to claim 17.

B. The rejection of claims 4-6 and 19-21 under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong and Kelsey should be reversed.

Claims 4-6 and 19-21 were under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong, and further in view of Kelsey. This rejection should be reversed for at least the following reasons.

Claims 4-6 and 19-21 are dependent from one of independent claims 1, 9, and 15. As discussed above, the proposed combination of Bryant and Dziong fails to disclose all of the features of independent claims 1, 9 and 15. In setting forth the rejection of claims 4-6 and 19-21,

the Examiner has not and cannot reasonably assert that the disclosure contained in Kelsey makes up for any of the deficiencies discussed above with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Bryant in view of Dziong with the disclosure contained in Kelsey, the proposed modification would still fail to yield all of the features of independent claims 1, 9, and 15.

For at least the foregoing reasons, claims 4-6 and 19-21 are *not* obvious in view of the combined disclosures contained in Bryant, Dziong, and Kelsey. Therefore, reversal of the rejection of claims 4-6 and 19-21and allowance of these claims are respectfully requested.

C. The rejection of claims 7, 10 and 11 under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong and Erhart should be reversed.

Claims 7, 10, and 11 were under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong, and further in view of Erhart. This rejection should be reversed for at least the following reasons.

Claims 7, 10, and 11 are dependent from one of independent claims 1 and 9. As discussed above, the proposed combination of Bryant and Dziong fails to disclose all of the features of independent claims 1 and 9. In setting forth the rejection of claims 7, 10, and 11, the Examiner has not and cannot reasonably assert that the disclosure contained in Erhart makes up for any of the deficiencies discussed above with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were

somehow motivated to modify the proposed combination of Bryant in view of Dziong with the disclosure contained in Erhart, the proposed modification would still fail to yield all of the features of independent claims 1 and 9.

For at least the foregoing reasons, claims 7, 10, and 11 are *not* obvious in view of the combined disclosures contained in Bryant, Dziong, and Erhart. Therefore, reversal of the rejection of claims 7, 10, and 11 and allowance of these claims are respectfully requested.

D. The rejection of claims 12-14 under 35 U.S.C. §103(a) as being unpatentable over Bryant in view of Dziong, Erhart, and Kelsey should be reversed.

Claims 12-14 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bryant in view of Dziong and Erhart, and further in view of Kelsey. This rejection should be reversed for at least the following reasons.

Claims 12-14 are dependent from claim 11. As discussed above, the proposed combination of Bryant, Dziong, and Erhart fails to disclose all of the features of claim 11. In setting forth the rejection of claims 12-14, the Examiner has not and cannot reasonably assert that the disclosure contained in Kelsey makes up for any of the deficiencies discussed above with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Bryant in view of Dziong, and Erhart with the disclosure contained in Kelsey, the proposed modification would still fail to yield all of the features of claim 11.

For at least the foregoing reasons, claims 12-14 are *not* obvious in view of the combined disclosures contained in Bryant, Dziong, Erhart and Kelsey. Therefore, reversal of the rejection of claims 12-14 and allowance of these claims are respectfully requested.

(8) Conclusion

For at least the reasons given above, the rejection of claims 1-21 described above should be reversed and these claims allowed.

Please grant any required extensions of time and charge any fees due in connection with this Appeal Brief to deposit account no. 08-2025.

Respectfully submitted,

Dated: January 20, 2011 By /Ashok K. Mannava/

Ashok K. Mannava
Registration No. 45,301
(703) 652-3822

MANNAVA & KANG, P.C.
11240 Waples Mill Road
Suite 300
Fairfax, VA 22030
(703) 865-5150 (facsimile)

(9) Claim Appendix

1. (Previously Presented) A method of cost determination for paths between switches in a mesh, the method comprising:

defining a set of paths between each pair of the mesh switches, each pair comprising a source switch and a destination switch;

calculating start-up costs for the previously defined paths; and

recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the destination switch to the source switch for each pair.

2. (Previously Presented) The method of claim 1 wherein the directed cost protocol comprises generating at the destination switch a cost packet with path information associated with a specific path.

3. (Previously Presented) The method of claim 2 wherein the directed cost protocol further comprises unicasting the cost packet via the specific path to the source switch.

4. (Previously Presented) The method of claim 3 wherein intermediate switches along the specific path each add cost information to the cost packet prior to forwarding the cost packet to a next switch along the specific path.

5. (Original) The method of claim 4 further comprising repeating the recalculation at periodic intervals.

6. (Previously Presented) The method of claim 5 wherein the directed cost protocol further comprises piggybacking information for more than one path into the cost packet.

7. (Previously Presented) The method of claim 1 wherein the previously defined paths are identified by path tags inserted into packets sent between the mesh switches.

8. (Original) The method of claim 1, wherein start-up cost packets are flooded through the mesh in order to define the set of paths between each pair of mesh switches and calculate the start-up costs.

9. (Previously Presented) A switching mesh comprising multiple packet switches, the switching mesh including

means for defining a set of paths between each pair of the mesh switches, each pair comprising a first switch and a second switch;

means for calculating start-up costs for the defined paths; and

means for recalculating costs for the previously defined paths using a directed cost protocol by transmitting a directed cost packet only down each of the previously defined paths from the second switch to the first switch for each pair.

10. (Previously Presented) The switching mesh of claim 9 wherein the previously defined paths are identified by path tags inserted into packets sent between the mesh switches, and wherein start-up cost packets are flooded through the mesh in order to define the set of paths between each pair of mesh switches and calculate the start-up costs.

11. (Previously Presented) The switching mesh of claim 10 further comprising means for repeating the recalculation at periodic intervals.

12. (Previously Presented) The switching mesh of claim 11, wherein the directed cost protocol comprises generating at the second switch a cost packet with path information associated with a specific path that begins at the first switch and ends at the second switch and unicast transmission of the cost packet via the specific path to the first switch.

13. (Previously Presented) The switching mesh of claim 12 wherein intermediate switches along the specific path each add cost information to the cost packet prior to forwarding the cost packet to a next switch along the specific path.

14. (Previously Presented) The switching mesh of claim 13 wherein the directed cost protocol further comprises piggybacking information for more than one path into the cost packet.

15. (Previously Presented) A packet switch in a switching mesh, the packet switch comprising:

a plurality of ports configured to connect to at least one destination switch in the switching mesh; and

a switch control device coupled to the plurality of ports, wherein the switch control device is configured to define a set of paths from the packet switch to the destination switch, calculate start-up cost for the previously defined paths, and execute directed cost protocol instructions in order to recalculate costs for previously defined paths by receiving a cost packet transmitted from the destination switch only down each of the previously defined paths.

16. (Previously Presented) The packet switch of claim 15 wherein the directed cost protocol instructions are configured to generate the cost packet with path information associated with a specific path between the packet switch and the destination switch.

17. (Previously Presented) The packet switch of claim 16 wherein the directed cost protocol instructions are further configured to unicast the cost packet via the specific path to the packet switch.

18. (Previously Presented) The packet switch of claim 17 wherein the directed cost protocol instructions are further configured to repeat the recalculation of costs for previously defined paths at periodic time intervals.

19. (Previously Presented) The packet switch of claim 18 wherein the directed cost protocol instructions are further configured to piggyback information for more than one path into the cost packet.

20. (Previously Presented) The packet switch of claim 18 wherein the directed cost protocol instructions are further configured to perform a flood discovery of paths at longer periodic time intervals.

21. (Previously Presented) The packet switch of claim 20 wherein path costs determined by the flood discovery of paths are used to substitute more efficient paths for less efficient paths.

(10) Evidence Appendix

None.

(11) Related Proceedings Appendix

None.